REMARKS

In view of the above amendment and the following discussion, the Applicants submit that none of the claims now pending in the application is anticipated under the provisions of 35 U.S.C. § 102. Thus, the Applicants believe that all of these claims are now in allowable form.

I. REJECTION OF CLAIMS 1-22 UNDER 35 U.S.C. § 102

The Examiner has rejected claims 1-22 in the Office Action under 35 U.S.C. § 102 as being anticipated by Westerlund et al. (U.S. 6,757,654, issued on June 29, 2004, herein referred to as "Westerlund"). Applicants respectfully traverse the rejection.

Westerlund discloses a forward error correction in speech coding. Specifically, it discloses the use of a primary encoder and a secondary encoder to encode an input signal.

The Examiner's attention is directed to the fact that Westerlund fails to teach or suggest a method for mitigating errors in frames received in a received communication where a difference between two references that are based on the received communication are used to adjust an adaptive codebook gain parameter and a fixed codebook gain, as positively claimed by the Applicants. Specifically, Applicants' independent claims 1 and 12 positively recite:

> 1. A method for mitigating errors in frames of a received communication, comprising:
> modifying said received communication for determining a reference signal;
> modifying said received communication for determining a modified reference signal; and
> adjusting an adaptive codebook gain parameter for an adaptive codebook and a fixed codebook gain based on a difference between the reference signal and the modified reference signal. (Emphasis added)
>
> 12. An apparatus for mitigating errors in frames of a communication, comprising:
> a signal receiver that receives a communication; and
> an error correction device coupled to the signal receiver that modifies said communication for determining a reference signal, modifies said communication for determining a modified reference signal, and adjusts an adaptive codebook gain parameter for an adaptive codebook and a fixed codebook gain based on a

difference between the reference signal and the modified reference signal. (Emphasis added)

Applicants' invention provides a frame erasure concealment device and method that is based on reestimating gain parameters for a code excited linear prediction (CELP) coder. During operation, when a frame in a stream of received data is detected as being erased, the coding parameters, especially an adaptive codebook gain g_p and a fixed codebook gain g_c, of the erased and subsequent frames can be reestimated by a gain matching procedure.

Contrary to the extrapolation method, the present invention can include an additional block that reestimates the adaptive codebook gain and the fixed codebook gain for an erased frame along with subsequent frames. As a result, any abrupt change caused in a decoded excitation signal by a simple scaling down procedure, such as in the extrapolation method, can be reduced. By using such a technique, it has been found that the present invention improves the speech quality under various channel conditions, compared with the conventional extrapolation-based concealment algorithm.

Specifically, the present invention includes the additional adaptive codebook memory (Adaptive Codebook II 310) that can be updated every subframe. During operation, the adaptive codebook II 310 determines a modified adaptive codebook vector v'(n) that can be calculated using the same long-term prediction lag T as that used to calculate the adaptive codebook vector v(n). Additionally, a modified fixed codebook vector c'(n) is generated that is equal to c(n) that is set randomly for an erased frame. The modified fixed codebook vector c'(n), which is equal to c(n), is transmitted through amplifier 325 and into summer 345. The gain of the amplifier 325 is g'_c. Similarly, the modified adaptive codebook vector v'(n) is passed through amplifier 330 and into the summer 345. The gain of the amplifier 330 is g'_p. In turn, the mean squared error block 360 can determine new gain vectors g'_p and g'_c so that a difference between the two synthesized speech signals $\hat{s}(n)$ and $\hat{s}'(n)$ is minimized. (See Applicants' specification, Paragraphs 0027-0033).

In contrast, the various sections cited by the Examiner in Westerlund completely fail to teach Applicants' invention. First, the Examiner cites Column 1, lines 58-60 as reciting the limitation of "determining a reference signal based on the received

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communication". The Examiner then cites Column 2, lines 11-14 as reciting the limitation of "determining a modified reference signal based on the received communication". It appears that the Examiner is citing the original input voice signal as being a reference signal. Applicants' claim scope is not so broad that would allow this broad interpretation by the Examiner. Specifically, Applicants recite a method for mitigating errors in a received communication. Thus, Applicants' invention is claiming a method that is performed on the decoder where the received communication has errors and not in the encoder as alleged by the Examiner where the original input signal is received. As such, the original voice signal is not available to the decoder.

Second, Applicants recite that both reference signals (i.e., the reference signal and the modified reference signals) are based on the received communication. In other words, both reference signals are generated from the same received communication. Notably, the reference signal (e.g., $\hat{s}(n)$) and the modified reference signal (e.g., $\hat{s}'(n)$) are each derived from a received communication. The Applicants have amended claims 1 and 12 in order to clarify the limitation that the received communication (e.g., the input signal) is modified. This is supported by the Applicants' specification, namely on page 6, paragraph 29 (also see FIG. 2) which describes that excitation sign u(n) and modified excitation signal u'(n) are processed by separate filters to produce the reference signal $\hat{s}(n)$ and the modified reference signal $\hat{s}'(n)$, respectively. Conversely, Westerlund teaches an unprocessed and unmodified original voice signal (i.e., the input signal) being used as a reference signal. This is confirmed by the Examiner who alleges (see page 2 of Advisory Action dated 10/31/2005) that the "input speech, which is a received communication segmented into frames, serves as a reference signal...." The Examiner is thus incorrectly interpreting the Applicants' claims 1 and 12 to define a reference signal and the received communication to be one and the same. Furthermore, there is no inference in the Applicants' specification or claim language to imply that the reference signal and original voice signal are identical. Consequently, the Applicants contend that original voice signal taught in Westerlund is not tantamount to the reference signal claimed by the Applicants.

Third, the sections cited by the Examiner, Column 2, lines 15-30 and Column 4, lines 66-Column 5, line 26 of Westerlund simply fails to disclose adjusting an adaptive

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codebook gain parameter and a fixed codebook gain based on a difference between the two reference signals. As discussed above, the sections cited by the Examiner simply does not teach the concept where two reference signals are generated from a received communication. As such, without the second reference signal, Westerlund cannot teach the concept of using a difference between the two reference signals to adjust an adaptive codebook gain parameter and a fixed codebook gain, as positively claimed by the Applicants. Thus, Westerlund fails to anticipate Applicants' independent claims 1 and 12.

Dependent claims 2-11, and 13-22 depend from claims 1 and 12 and recite additional limitation, respectively. As such, and for the exact same reason set forth above, the Applicants submit that claims 2-11, and 13-22 are also not anticipated by the teachings of Westerlund. Therefore, the Applicants submit that claims 1-22, as they now stand, fully satisfy the requirements of 35 U.S.C. §102 and are patentable thereunder.

Conclusion

Thus, the Applicants submit that all of these claims now fully satisfy the requirements of 35 U.S.C. §102. Consequently, the Applicants believe that all these claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring the maintenance of the present final action in any of the claims now pending in the application, it is requested that the Examiner telephone Mr. Kin-Wah Tong, Esq. at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

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